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VOL. 17 PART 3

TRANSACTIONS

OF THE

SOCIETY FOR BRITISH ENTOMOLOGY

World List abbreviation: *Trans. Soc. Brit. Ent.*

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M. J. Parr

Redescriptions of the Females of Four Förster Species of *Aphanogmus* Thomson, 1858 (Hymenoptera: Ceraphronidae)

Date of Publication, October 1966.

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Published for the Society by the British Trust for Entomology Ltd.

BRITISH TRUST FOR ENTOMOLOGY LTD.
41 QUEEN'S GATE, LONDON, S.W.7.

"THE ENTOMOLOGIST"
AND
"TRANSACTIONS OF THE SOCIETY FOR BRITISH ENTOMOLOGY"

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TRANSACTIONS OF THE SOCIETY
FOR BRITISH ENTOMOLOGY

VOL. 17 OCTOBER 1966 PART III

Redescriptions of the Females of Four Förster Species of *Aphanogmus* Thomson, 1858 (Hymenoptera : Ceraphronidae)

By M. J. Parr

(Department of Biology, Royal College of Advanced Technology,* Salford, Lancs.)

This paper is presented in order to complete the redescriptions of Palaearctic species of *Aphanogmus* Thomson, 1858, which, owing to inadequate existing descriptions, were very difficult or impossible to recognise from the literature. The author (Parr, 1960) has redescribed the female of *A. fumipennis* Thoms. 1858, and Dessart (1963a, 1963b, 1964, and 1965) in a series of masterly papers has brought up to date the descriptions of many species originally named and described by Thomson and Kieffer. The present paper aims to clarify as far as possible the four Förster species *Aphanogmus vicinus, A. fasciolatus, A. elegantulus* and *A. gracilicornis.* The author supports the view of Masner (1964), who states:

"It is believed that the examination of types and their recognition is the only way how to achieve a resounding success in improving the present stage of the taxonomy of Proctotrupoidea". Each of the four species dealt with here is described in three or four lines by Förster (1861) and Kieffer (1914). Only the survival of the types in the Naturhistorisches Museum, Vienna, has saved each of these species from becoming a virtual *species dubium.*

It would appear that Förster's *A. vicinus* and *A. elegantulus* are based in each case on a single specimen; these can be designated holotypes. Both male and female *A. gracilicornis* are mentioned by Förster (*loc. cit.*) and Kieffer (*loc. cit.*), but only the female specimen was seen by the author. This specimen is, therefore, designated the lectotype. The position of *A. fasciolatus* is more difficult to resolve as five specimens (three male and two female) bearing this name were examined. It was considered that at least two, and possibly three, different species had been confused by Förster and all given the same name. Therefore, the female specimen (jointly mounted with three males on the same main pin) in best condition has been designated the lectotype. The

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three male specimens and another female labelled "*A. fasciolatus*" need to be critically examined in the light of further knowledge to determine their true specific identity.

All the specimens redescribed in this paper are mounted on very corroded small pins which pass through the mesosoma. This method of mounting has resulted in some distortion of all the specimens, making measurements difficult and somewhat unreliable. The very considerable distortion of the mesosoma of *A. vicinus* prevented the production of a useful illustration.

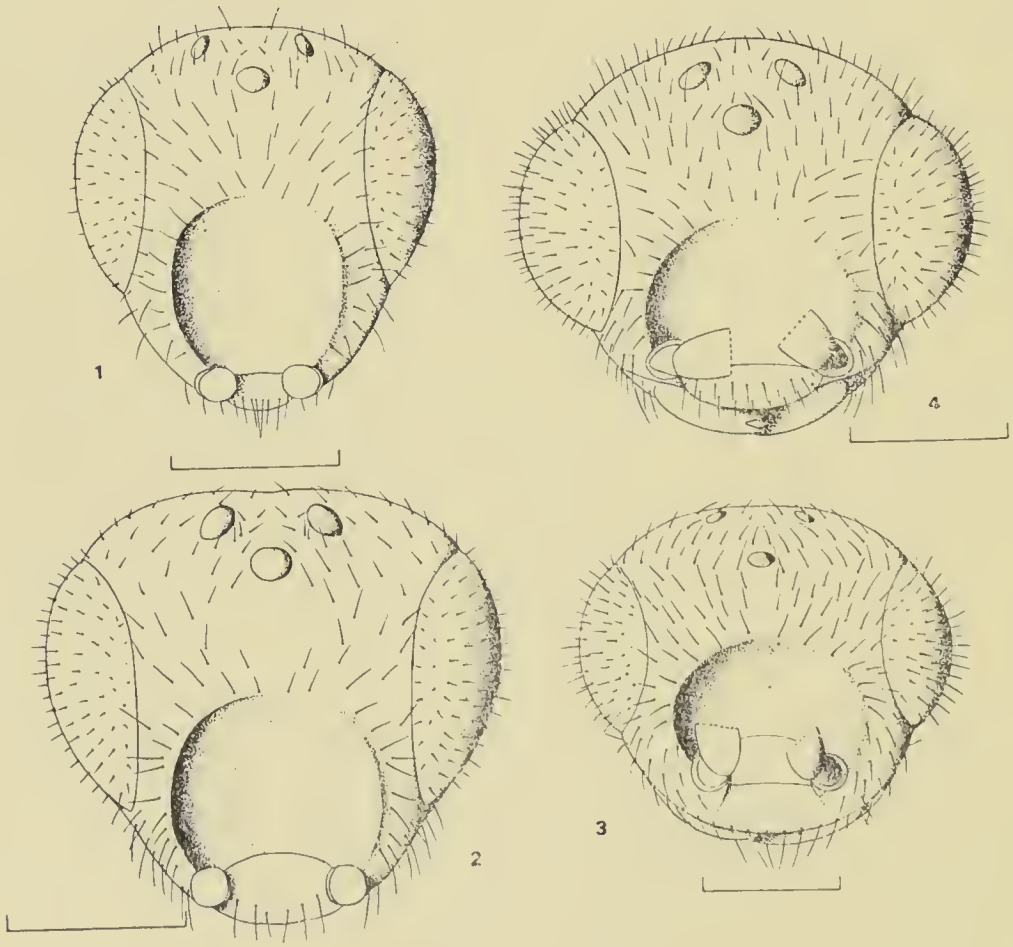
The author has followed the example of Dessart (1963a) in utilising the curvature of the radial vein as a useful taxonomic character. The terminology employed is as in Parr (1960); all measurements given in the text are in millimetres unless stated otherwise. The scale lines on the figures represent 0·1 mm.

APHANOGMUS ELEGANTULUS Förster, 1861.

(Figs. 1, 5, 9 and 14)

Female

Head (Fig. 1).—When seen from above approximately two-thirds as long as broad (0·154 : 0·226), reticulate, shining brown and setose. Ocelli distinct and forming wide based triangle,



FIGS. 1-4.—Heads in face view: 1, *Aphanogmus elegantulus*; 2, *A. gracilicornis*; 3, *A. vicinus*; 4, *A. fasciolatus*.

POL : LOL : OOL = 0·073 : 0·058 : 0·045; a clearly defined median occipital furrow extends forwards from the occipital carina and ends just posterior to the anterior margin of the slightly concave vertex. Occiput clearly concave; head from front clearly longer than broad (0·239 : 0·226), with eyes only bulging slightly; interocular distance (for face) 0·136; supraclypeal depression well formed, rather longer than broad (0·117 : 0·104), with upper half reticulate; clypeus fringed with longish setae (0·024); eyes reddish brown and finely setose, when seen laterally are broadly and equally rounded at each end with the posterior border forming a slight convex curve, longer than broad (0·133 : 0·107); malar space less than half as long as the eye (0·059).

Antennae (Fig. 5).—Slender and only weakly thickened distally, with all segments considerably elongated; scape rather pale yellowish-brown, lighter distally, having the usual club-shaped form common to the genus, nearly as long as the four following segments together (0·183 : 0·187)), with setae mostly restricted to ventral side and not dense, for much of its length the scape is broader than any of the other antennal segments (0·033); pedicel nearly three times as long as broad, expanding sharply from base; segments 3-9 very similar, roughly cylindrical; segment 3 very slender and nearly cylindrical, approximately 2½ times as long as broad; segment 4 cylindrical, the same breadth as segment 3 but shorter; segment 5 rather less than twice as long as broad; segment 6 equal in length with the preceding segment, but very slightly thicker; segment 7 slightly longer and broader than segment 6, distinctly tapered proximally; segment 8 clearly longer than each of the preceding four segments and virtually equal in length with segment 3, slightly broader than the preceding flagellar segments; segment 9 longer, but the same breadth as segment 8, tapering slightly proximally; segment 10 longer and broader than any of the other flagellar segments, tapering distally to a point, shorter than segments 8 and 9 together (0·094 : 0·105); setae on segment 10 shorter than on other flagellar segments.

Dimensions of antennal segments (seen in profile) : —

Segment	1	2	3	4	5	6	7	8	9	10
Length (μ)	183	66	50	43	41	41	42	49	56	94
Breadth (μ)	33	23	19	19	22	23	25	25	25	28

Mesosoma (Fig. 9).—Detailed measurements of some aspects of the mesosoma were difficult to carry out owing to a very corroded mounting pin passing through the mesoscutum. Glossy brown and mostly reticulate and moderately setose, whole mesosoma appearing high in relation to the length and breadth; less than three-fifths as broad as long (0·175 : 0·303), but the width very difficult to measure accurately due to the position of the mounting

pin; very much deeper than broad (0·271 : 0·175); pronotum clearly visible from above; mesoscutum seen from above with definite, rounded shoulders (not square), without median scutal line: seen laterally, mesoscutum very arched; axillae separated from mesoscutum by fine scutal suture which curves strongly posteriorly in the region of the wing bases and which also dips posteriorly to the mid-dorsal line; axillae demarcated from scutellum by only moderately well developed, curving, oblique scutellar sutures formed as series of rather shallow pits; scutellum very arched, elongated (0·145 : 0·098), reticulate, with distinct frenum; frenum rather angular and bearing only two obvious shallow pits; mesepisternum glossy brown non-setigerous with fine elongated longitudinal reticulations; mesosoma with two posterior dorsolateral spines; propodaeum very short, slanting obliquely anterodorsal to posteroventral seen laterally, visible dorsally posterior to frenum and metanotal spines.

Forewings (Fig. 14).—Whole wing very slightly smoky, pubescent, tips broadly and evenly rounded, more than three times as long as broad (0·652 : 0·208); fringing setae of varying lengths, longest (0·040) on distal dorsal margin; other long fringing setae on whole of wing tip, on proximal costal margin (0·033), and a single long proximal dorsal seta (0·027); setae on upperwing surface mostly pointing towards wing tip except for small patch near mid-dorsal area where setae are directed towards radial vein and costal margin; sub-marginal vein dark brown, widest distally and proximally and angled concavely about midway between base and distal tip; marginal vein brown, paler and tapered at extreme tip, equal in thickness to distal end of sub-marginal vein, length 0·073; radial vein pale brown, slightly longer than marginal vein (0·076 : 0·073), weakly curved (radial curve = 7·37 %) with tip more swollen than base, origin approximately 0·015 from tip of marginal vein.

Legs.—Pale yellow-brown (sandy) with joints rather paler and coxae only slightly darker; hind coxae with row of 4 short setae on posterior borders.

Metasoma.—Polished, glossy medium-brown, longer than mesosoma (0·357 : 0·303); compressed laterally, especially at hind end, markedly keeled posteroventrally, anteriorly (seen laterally) rather tapered and not with definite shoulders; setae only present on posterior segments, long setae placed dorsally, shorter setae ventrally.

Total length.—Approximately 0·75 mm.

Material.—Single specimen (Holotype female), *A. Förster,* 1861, deposited in the Naturhistorisches Museum, Zoologische Abteilung, Vienna; sp. redescribed.

Type locality: Swiss Alps (Rosegthal).

APHANOGMUS GRACILICORNIS Förster, 1861.

(Figs. 2, 6, 10 and 12)

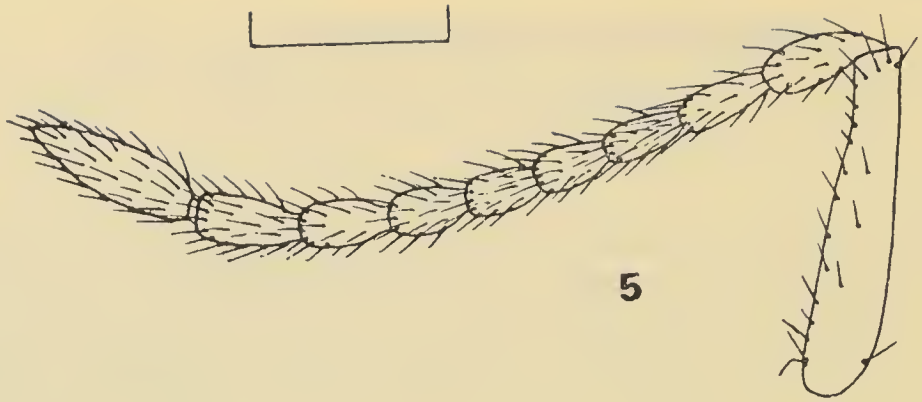
Female

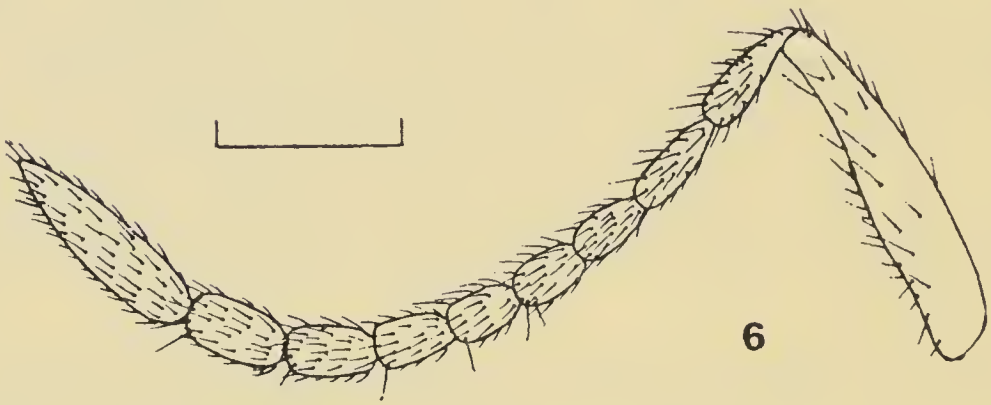
Head (Fig. 2).—Finely reticulate, dark brown, shining and setose; from above approximately three-fifths as long as broad (0·163 : 0·265); ocelli forming a broad based triangle, POL : LOL : OOL = 0·083 : 0·061 : 0·057; a median occipital furrow extends forwards about two-thirds the distance from occipital carina to the lateral ocelli; posterior margin of head seen from above clearly concave; head from front rather triangular and slightly broader than long (0·265 : 0·245), with eyes only bulging slightly; supraclypeal depression well developed and broad (0·122); eyes large and widely spaced, interocular distance (face) 0·165; eyes when seen from side, large, much longer than broad (0·143 : 0·112), oval, with hind margin straighter than anterior margin, paler brown than rest of head, ocular setae relatively short; clypeus fringed with row of six setae; malar space short in relation to eye length (0·058).

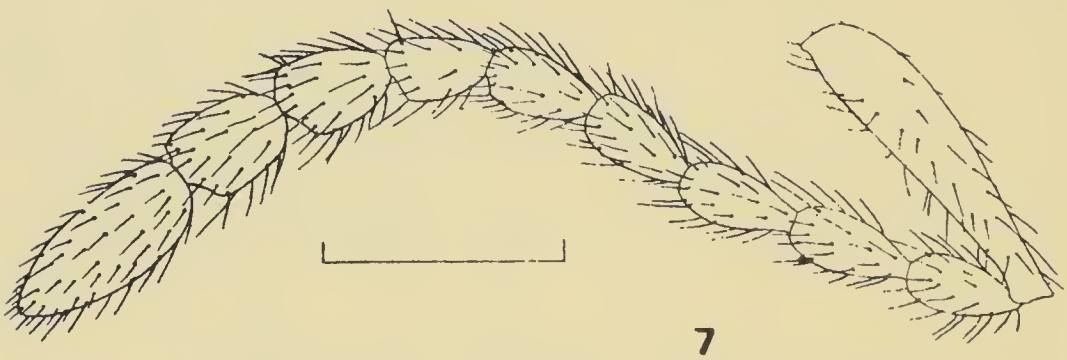
Antennae (Fig. 6).—Long and slender, rather weakly thickened distally, with all segments elongated; scape pale brown, rather paler distally, club-shaped, widest at a point 0·133 mm. from distal end, of length 0·194 and width 0·041, setose with ventral proximal setae directed towards antennal base; scape slightly shorter than four following segments together (0·194 : 0·205); pedicel slender, expanding gradually from base, very elongated, about three times as long as broad; segment 3 very slender and nearly cylindrical, more than three times as long as broad; segment 4 much shorter and slightly broader than segment 3; segments 5, 6, and 7 of rather similar proportions—0·044 : 0·023, 0·042 : 0·025 and 0·047 : 0·025 respectively; segment 8 clearly broader than each of the preceding four segments; seg. 9 broader than any of the preceding flagellar segments (0·031) and longer than all the flagellar segments except the 1st and 8th (0·055); segments 5-9 inclusive markedly cylindrical in form, with segments 2 and 3 less so; segment 10 slender and pointed terminally, with shorter setae, slightly broader than segment 9 (0·033), longer than segments 8 and 9 combined (0·127 : 0·104); all flagellar segments setose, with longest setae on distal ends of each segment (except the 10th) and showing most prominently on distal ventral borders; intersegmental membranes pale.

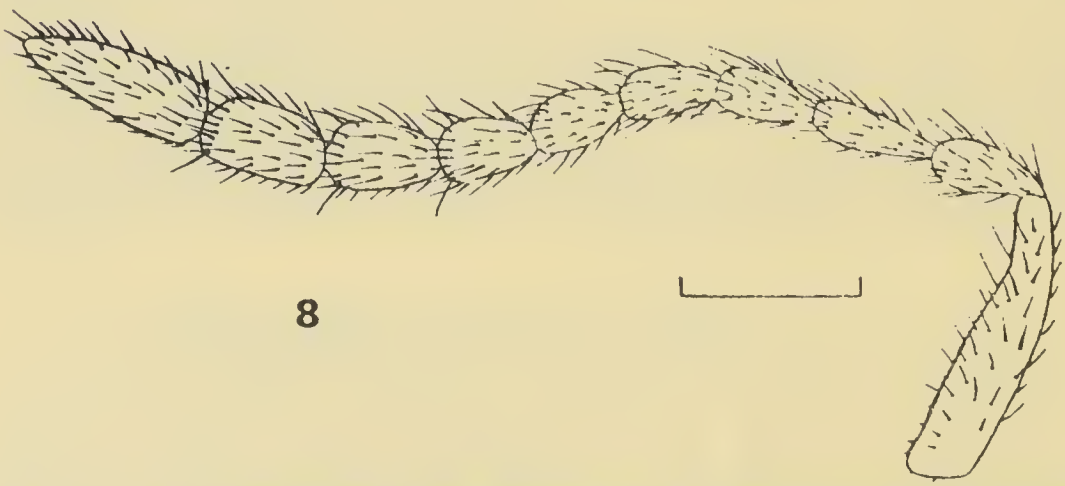
Dimensions of antennal segments (seen in profile) : —

Segment	1	2	3	4	5	6	7	8	9	10
Length (μ)	194	65	60	47	44	42	47	49	55	127
Breadth (μ)	41	21	19	22	23	25	25	28	31	33









FIGS. 5-8.—5, *A. elegantulus*, left antenna; 6, *A. gracilicornis*, left antenna; 7, *A. vicinus*, right antenna; 8, *A. fasciolatus*, right antenna (medial view).

Mesosoma (Fig. 10).—Impaled obliquely on a fine pin (now very corroded); considerably distorted, making it impossible to carry out accurate measurements. Dark glossy brown, reticulate, setose and slender; less than three-fifths as broad as long (approximately 0·220 : 0·388); more than two-thirds as broad as deep (approximately 0·220 : 0·295); pronotum clearly visible from above, rugose, with a median anterior concavity; mesoscutum with weakly angled shoulders, transverse (0·220 : 0·143), without median scutal line, separated from axillae by distinct scutal suture which curves rather strongly posteriorly in region of forewing bases; mesoscutum anteriorly very humped when seen in lateral view; mesepisternum glossy brown with fairly close and fine longitudinal reticulations, lacking setae; axillae separated from each other by very weak linear axillar suture and separated from the scutellum by series of fourteen pits forming the scutellar suture; scutellum elongated (0·150 : 0·112) with rather sparse surface setae and laterally with row of dense shorter setae, quite strongly arched when seen from lateral aspect; frenum well developed but almost entirely terminal, with four distinct pits; metanotum very short and indistinct, posteriorly with two short dorsolateral spines; propodaeum, when seen laterally, sloping steeply and obliquely from anterodorsal to posteroventral.

Forewings (Fig. 12).—Whole wing very pale sandy yellow, moderately pubescent, more than three times as long as broad (0·906 : 0·294); fringing setae of varying lengths, longest (0·060) on distal dorsal margin, shortest on distal costal margin (0·033); proximal hind margin naked except for three long proximal dorsal setae at a point approximately 0·257 mm. from the wing base; most of setae on proximal upper wing surface directed obliquely towards radial, marginal or sub-marginal veins; sub-marginal vein dark brown, widest proximally and distally with the centre portion slender and angled concavely; marginal vein paler than sub-marginal vein, brown throughout except extreme tip which is very pale and tapered, very slightly narrower than distal portion of sub-marginal vein, length 0·085; radial vein very pale brown, clearly longer than marginal vein (0·115 : 0·085), nearly straight (radial curve = 2·32 %), with distal half more swollen than base, origin 0·008 from tip of marginal vein.

Legs.—Coxae, trochanters, femora and tibiae mostly medium brown; tarsi and joints between other segments pale sandy-brown. Hind coxae each with a single seta on posterior margin near distal tip.

Metasoma.—Glossy brown, length 0·398, surface quite smooth except for shoulders which are reticulate, posteriorly laterally compressed and posteroventrally sharply keeled; anterior face concave, shoulders angular when seen from above; non-setigerous except for shoulders, posterior segments and keel.

Approximate total length:—0·935 mm.

Material.—Single specimen (Lectotype female).

A. Förster, 1861, deposited in the Naturhistorisches Museum, Zoologische Abteilung, Vienna; sp. redescribed.

Förster's male material of this species was not seen.

Type locality: Swiss Alps (Rosegthal).

APHANOGMUS VICINUS Förster, 1861.

(Figs. 3, 7, and 13)

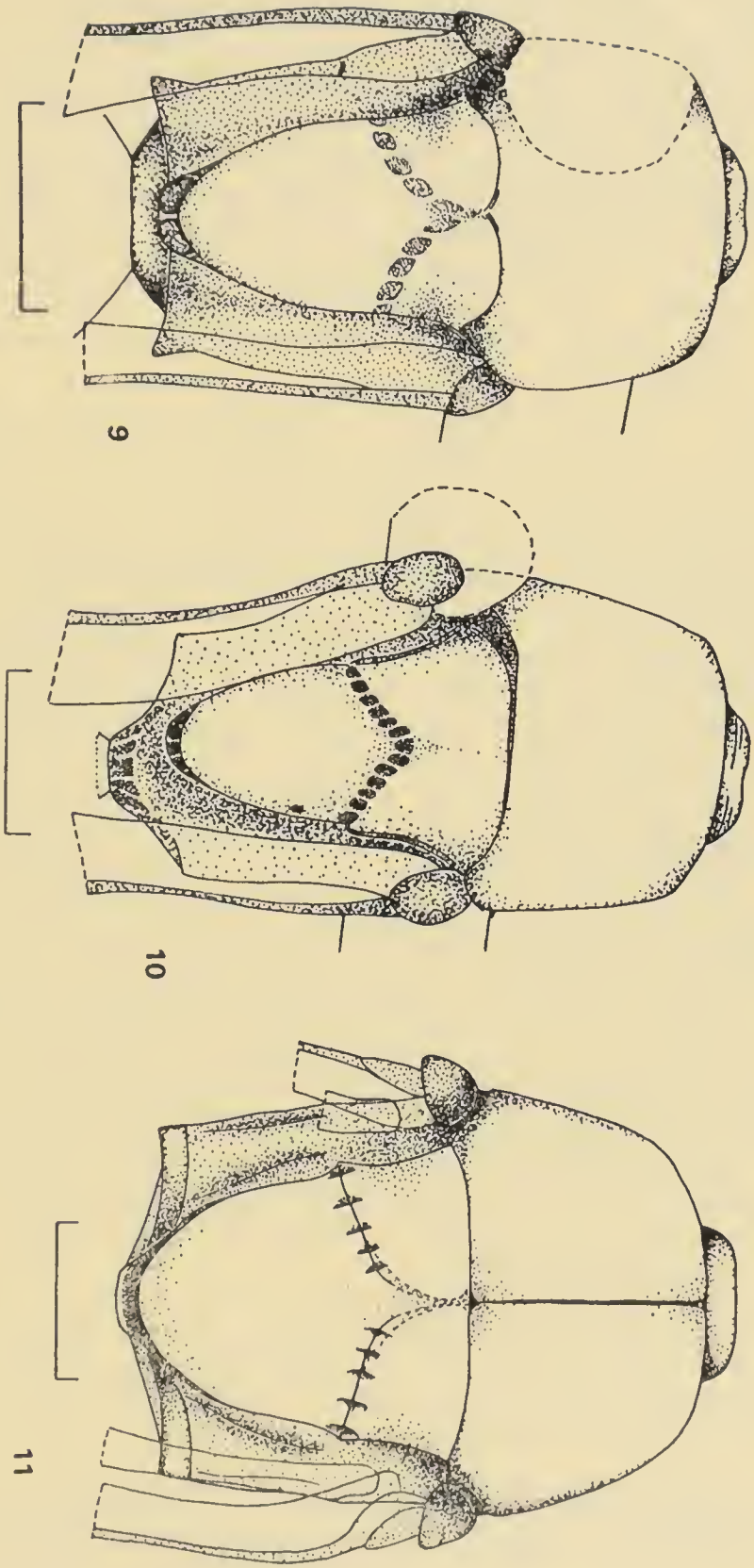
Female

Head (Fig. 3).—Dark brown, reticulate, appearing relatively densely setose; from above more than three-fifths as long as broad (0·150 : 0·272); ocelli distinct and ovoid, forming widely based triangle, POL : LOL : OOL = 0·085 : 0·062 : 0·060, median ocellus rather larger than lateral ocelli; median occipital furrow extends as series of pits from well formed posterior occipital carina to postocellar line; occiput and region below posterior occipital carina markedly flattened; head in facial view transverse (0·272 : 0·247), with supraclypeal depression which is also transverse and is without setae; eyes prominent and bulging, when seen in lateral view longer than broad (0·127 : 0·110) and with hind margin definitely curved; compared with many other species, eyes broad in relation to eye length and malar space long, again in relation to eye length (0·065 : 0·127).

Antennae (Fig. 7).—Brownish, with intersegmental membranes paler; all segments distal to scape longer than broad and increasing steadily in thickness, no distinct club; segments 2-9 of similar lengths, each being roughly half the length of segment 10; rather thickly setose except for the scape; scape club-shaped and widest at a point about $\frac{1}{4}$ of distance from proximal end, length 0·142, maximum breadth 0·031; pedicel and segments 3 and 4 very similar in general shape and dimensions, setae on these three segments rather long and non-differentiated; setae on segments 7, 8, 9 and 10 show a marked differentiation into shorter ventral and longer dorsal setae; segments 6, 7, 8 and 9 becoming more angular distally, in contrast to the rounded distal ends of the more proximal flagellar segments. Dimensions of antennal segments (seen in profile):—

Segment	1	2	3	4	5	6	7	8	9	10
Length (μ)	142	47	47	46	45	44	44	46	50	89
Breadth (μ)	31	23	24	24	25	26	28	34	35	36

Mesosoma.—Mostly dark brown and reticulate; details of dimensions and shape difficult to define owing to pin passing through mesosoma, causing considerable distortion of the specimen; approximate measurements as follows:—



FIGS. 9-11.—9, *A. elegantulus*, mesosoma dorsum; 10, *A. gracilicornis*, mesosoma dorsum; 11, *A. fasciolatus*, mesosoma dorsum. All shown without setae.

Length, 0·365, breadth, 0·215, depth, 0·281; pronotum from above hardly visible, laterally with marked reticulations; mesoscutum without median scutal line and separated from axillae by distinct scutal suture curving posteriorly in region of wing bases; axillae and scutellum crushed downwards making edge of scutellum (frenum) invisible; axillae separated from each other by a median longitudinal suture and from the scutellum by distinct and dark scutellar suture; mesepisternum glossy brown with longitudinal reticulate striations, non-setigerous; posteriorly with two short metanotal spines, visible when seen from the dorsal aspect; propodaeum very short, sloping almost vertically downwards from scutellum to metasoma.

Forewings (Fig. 13).—Hyaline, with a feint brownish transverse band across middle of wing; at costal margin the transverse band extends proximally from base of radial vein to a point along sub-marginal vein where a distinct narrowing occurs, the band is of a similar width at the dorsal margin but is markedly narrower midway along the band; wing surfaces generally pubescent except for basal area; setae on upper wing surface mostly directed towards wing-tip, except for irregular patch on centre of cross-band and just proximal to it, where setae are directed more towards the radial vein; setae absent from upper surface of basal area except for the costal margin and an isolated group of 4 small setae arranged longitudinally in centre of basal area; wing-tips broadly rounded; slightly less than three times as long as broad (0·775 : 0·263); longest fringing setae on proximal costal (0·046) and distal dorsal margins (0·052); an isolated group of 3 long setae (each 0·044) on dorsal margin 0·221 mm. from wing base; sub-marginal vein dark brown, with the distal quarter thicker than the remainder except the extreme base which is markedly swollen, angled concavely half-way between proximal and distal ends; marginal vein paler brown than sub-marginal vein and nearly as thick as the distal portion of the latter, length 0·081; postmarginal vein very pale and tapered, length 0·007; radial vein very pale sandy-brown, curved (curvature of radial vein 5·93%) and tip slightly swollen, length 0·093.

Hindwings.—Hyaline, without veins; shorter (0·724 : 0·775) and just over half as wide (0·142 : 0·263) as forewings; longest setae (0·095) on distal dorsal margin; 3 hamuli on front edge at point 0·426 mm. from wing base.

Legs.—Coxae, trochanters, femora and tibiae medium brown; tarsi and all leg joints sandy-yellow; hind coxae with row of setae (each approximately 0·015) on middle posterior border; distal anterior border of coxae fairly thickly setose.

Metasoma.—Glossy brown, length 0·375, not keeled, only having a faint ridge along mid-ventral line of gaster and not compressed laterally, being clearly broader than deep (0·222 : 0·215) when viewed from the posterior end; terminal segments forming

sharp posterior point and are setigerous; anterior face flat and almost vertical, demarcated by distinct circular ridge; lightly setigerous on ventral surfaces.

Total Length:—Approximately 0·890 mm.

Material:—Single specimen (Holotype female).

A. Förster, 1861, deposited in the Naturhistorisches Museum, Zoologische Abteilung, Vienna; sp. redescribed.

Type Locality: Swiss Alps (Rosegthal).

APHANOGMUS FASCIOLATUS Förster, 1861.

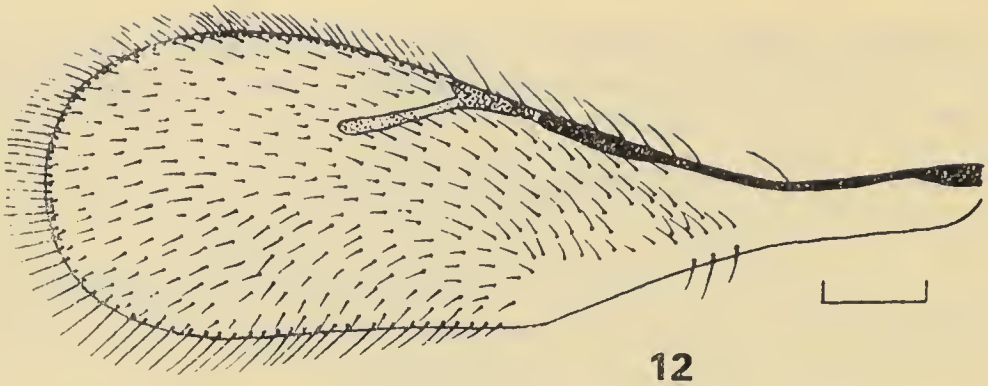
(Figs. 4, 8, 11 and 15)

Female

Head (Fig. 4).—Coarsely reticulate, very dark brown, shining, generally well covered with setae except for supraclypeal depression and mandibles which are naked; when seen from above, head distinctly flattened, nearly twice as broad as long (0·304 : 0·163); ocelli large and distinct, POL : LOL : OOL = 0·086 : 0·062 : 0·065; a well marked and deep median occipital furrow extending forwards from posterior occipital carina to vertex of head, over the moderately flattened occiput to approximately mid-way between the lateral ocelli; vertex gently curved, with no sharp line of demarcation between occiput and ocellar region; posterior margin of head only very slightly concave when viewed from above; head when seen in face view clearly transverse (0·304 : 0·265); with mandibles very prominent; interocular distance (face view) 0·174; supraclypeal depression distinct, broader than high, but with ill-defined borders; clypeus with double row of setae (each seta up to 0·03 long); eyes very prominent and bulging laterally, dark reddish-brown, well covered with rather short setae, length 0·142, breadth 0·118; posterior margin of eye distinctly convex making eye outline oval; malar space length 0·053.

Antennae (Fig. 8).—Uniform pale sandy brown, distinctly thickened distally, but not clubbed, all segments clearly elongated; scape roughly club-shaped with distal one-fifth tapered and angled ventrally, dorsal proximal surfaces apparently lacking in setae, otherwise normally setose; segments 3-10 increasing steadily in thickness and segments 4-9 showing general tendency to increase in length; segment 3 very slender (nearly 3 times as long as broad); setae on dorsal and ventral surfaces of flagellar segments of approximately equal lengths. Dimensions of antennal segments (seen in profile):—

Segment	1	2	3	4	5	6	7	8	9	10
Length (μ)	178	65	68	52	51	55	55	62	69	102
Breadth (μ)	35	29	24	26	27	32	35	37	37	41



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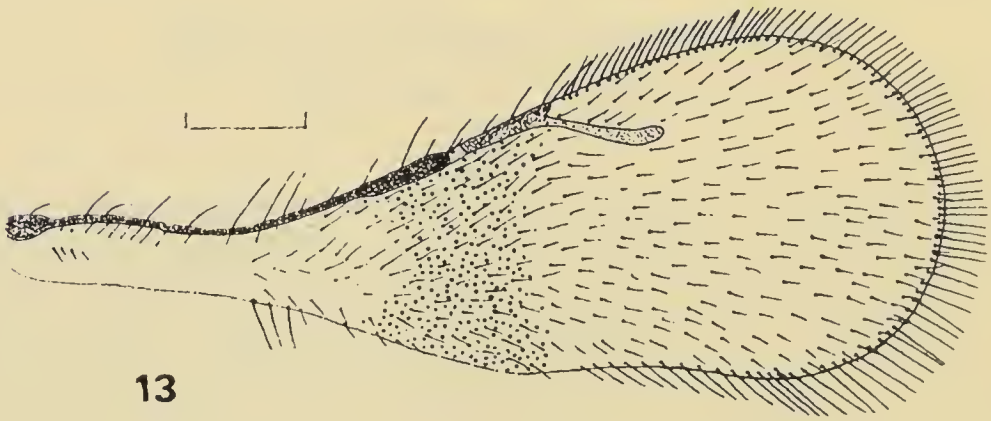

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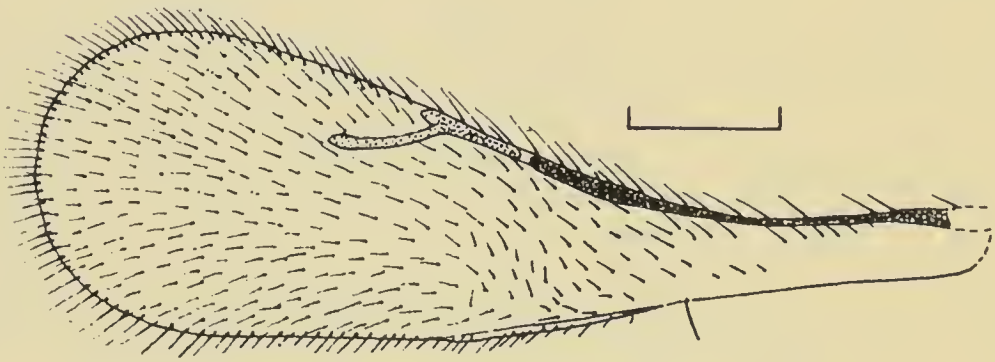

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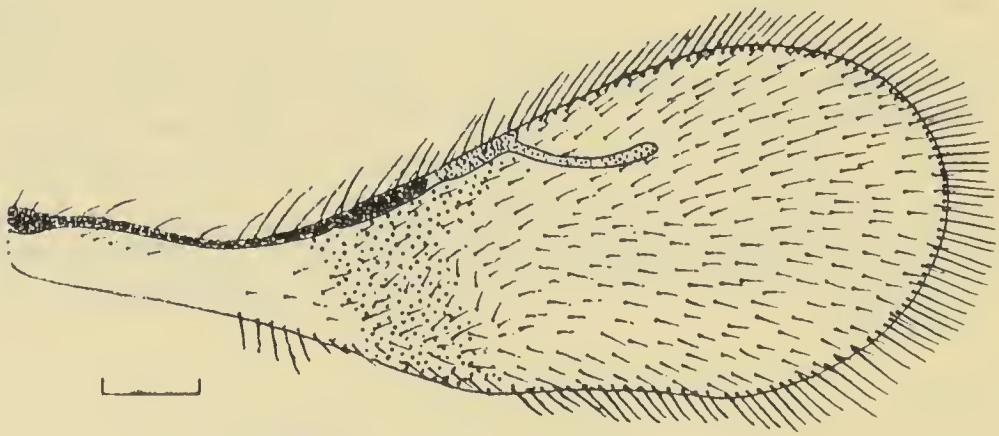

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FIGS. 12-15.—12, *A. gracilicornis*, left forewing; 13, *A. vicinus*, right forewing; 14, *A. elegantulus*, left forewing; 15, *A. fasciolatus*, right

Mesosoma (Fig. 11).—Broad and robust, reticulate, with distinct median scutal line extending posteriorly from pronotum and fusing with the junction of the axillae; posteriorly with 2 short, square, dorsolateral spines; owing to method of mounting (fine pin through mesosoma) dimensions difficult to define really accurately, approximate measurements as follows:—

Length 0·391, height 0·359, breadth 0·275;

pronotum small, but clearly visible from above; mesoscutum very broad in region of wing bases, transverse (0·275 : 0·188), shoulders rounded; scutal suture separating mesoscutum and axillae is a clearly defined, transverse almost straight line, forming a right-angle with the median scutal line on each side; scutellar suture well developed as series of 4 large pits separated by ridges on posterior border of each axilla; mesoscutum, axillae and scutellum both well covered with setae, setae on axillae pointing obliquely towards midline; scutellum broad in relation to length (0·167 : 0·178), fringed laterally with setae (longest 0·037); series of large pits forming distinct terminal frenum; mesepisternum shining medium brown, naked, strongly and coarsely reticulate with the pattern arranged approximately longitudinally; seen laterally pronotum provided with fine reticulations; mesoscutum and scutellum high, the latter being strongly arched in lateral view.

Forewings (Fig. 15).—Almost hyaline except for an irregular smoky band crossing wing from marginal vein and distal one-third of sub-marginal vein to the dorsal fold; slightly less than three times as long as broad (0·966 : 0·350), wing-tips broadly rounded; upper wing surface generally setose except for basal area which bears an isolated longitudinal row of 5 short setae; setae on upper wing surface mostly directed towards wing-tip, except for irregular patch on centre of cross-band and just distal to it, where setae are directed more towards radial vein; longest fringing setae on sub-marginal vein (0·050) and wing-tip (0·050); 5 obvious proximal dorsal setae commencing at a point 0·245 mm. from base of wing, these merge with group of three shorter, less obvious, setae distally; dorsal fold without projecting or fringing setae; sub-marginal vein dark brown, basal region swollen and distal quarter thicker than the remainder, angled concavely half-way between distal and proximal ends, length 0·440; marginal vein paler brown, equal in thickness to distal region of sub-marginal vein, length 0·093; post-marginal vein very short (0·007) and pale in colour; radial vein very pale brown, slightly swollen at tip, longer than marginal and post-marginal veins combined (0·132 : 0·100), distinctly curved (radial curvature = 10·61 %).

Hindwings.—Length 0·845, width 0·180; longest setae (0·102) on distal dorsal margin; with group of three hamuli at a point about 0·375 mm. from wing tip.

Legs.—Coxae proximally medium brown, lightening to pale sandy-brown distally, hind coxae with single seta on posterior margin near to distal tip and with distal anterior margin fairly

thickly setose; trochanters, femora and tibiae pale sandy-brown and tarsi very pale yellowish.

Metasoma.—Relatively very globular, with no trace of keeling on the ventral side; longer than the mesosoma (0·452 : 0·391), but distinctly shallower than mesosoma when seen laterally (0·311 : 0·359); scattered, longish setae present on terminal segments, with a few also present ventrally; whole surface of metasoma a highly polished, medium brown colour.

Total Length:—Approximately 1·01 mm.

Material.—Single specimen (designated lectotype female).

A. Förster, 1861, deposited in the Naturhistorisches Museum, Zoologische Abteilung, Vienna, sp. redescribed. This specimen is mounted on the same main pin as three male specimens of *Aphanogmus* sp. The true specific determination of these three male specimens (labelled "*A. fasciolatus*") and another female specimen mounted on a separate main pin (also labelled "*A. fasciolatus*") remain obscure.

Type locality: Swiss Alps (Rosegthal).

Summary

The author gives redescriptions of *Aphanogmus vicinus, A. elegantulus, A. fasciolatus* and *A. gracilicornis*, named by A. Förster in 1861, and deposited in the Naturhistorisches Museum, Zoologische Abteilung, Vienna, Austria.

Acknowledgments

I am grateful to Dr. Max Fischer for allowing me to examine the specimens in his care and to Dr. Paul Dessart for his continued help and encouragement. I also gratefully acknowledge the constructive criticism and kind help of Mr. G. J. Kerrich who read the first draft.

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